

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
27 January 2005 (27.01.2005)

PCT

(10) International Publication Number  
WO 2005/007570 A3

(51) International Patent Classification<sup>7</sup>: C01B 17/04, B01D 53/86

(74) Agent: WICKHAM, Mike; The BOC Group plc, Chertsey Road, Windlesham, Surrey GU20 5HJ (GB).

(21) International Application Number: PCT/GB2004/003032

(22) International Filing Date: 13 July 2004 (13.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 0316433.2 14 July 2003 (14.07.2003) GB

(71) Applicant (for all designated States except US): THE BOC GROUP PLC [GB/GB]; Chertsey Road, Windlesham, Surrey GU20 5HJ (GB).

(72) Inventor; and

(75) Inventor/Applicant (for US only): GRAVILLE, Stephen, Rhys [GB/GB]; c/o BOC Gases, Rother Valley Way, Holbrook Industrial Estate, Sheffield, South Yorkshire S20 3RD (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

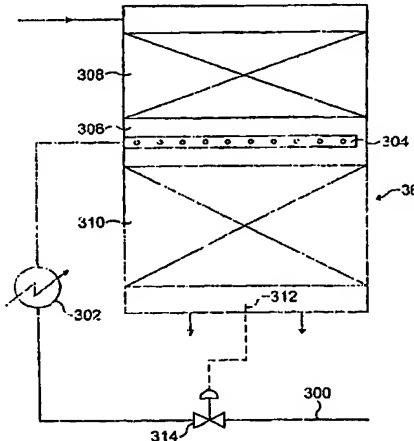
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: PROCESS FOR RECOVERING SULPHUR FROM A GAS STREAM CONTAINING HYDROGEN SULPHIDE



WO 2005/007570 A3

(57) Abstract: A feed gas stream containing hydrogen sulphide is subjected to Claus reaction in a Claus furnace (16). Oxygen or oxygen-enriched air containing at least 80 % by volume of oxygen is supplied to the furnace (16) to support combustion of the hydrogen sulphide. The ammonia is completely destroyed in the furnace (16). Sulphur vapour is condensed out of the resultant effluent gas in a sulphur condenser (30). The sulphur depleted effluent gas is subjected to a plurality of stages of catalytic reaction of hydrogen sulphide in order to form further sulphur vapour in catalytic reactors (36, 44) and (52) with the sulphur vapour being condensed out of the gas in sulphur condensers (38, 46) and (54). The sulphur dioxide content of the resulting tail gas is reduced to hydrogen sulphide in a reactor (60). Water vapour is condensed out of the reduced tail gas in a quench tower (64). A first portion of the water vapour depleted tail gas is recycled to the combustion region of the Claus furnace (16). A second portion is vented typically to an incinerator (80). Any excess gas in the first portion is introduced into an intermediate region of the most upstream (36) of the catalytic reactors (36, 44) and (52).



- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(88) **Date of publication of the international search report:**  
30 June 2005